AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) A method of managing overwrite on a write once optical disc, the disc including a user data area having a specified area where data is written therein, the method comprising:

in response to a request that the specified area having the data written therein be overwritten, writing replacement-recording data associated with the request, starting from a rear portion of the user data area;

recording, in a management area of the disc, first information indicating a last logical sector number of the user data area, wherein the last logical sector number has been changed in accordance with the replacement recording operation such that the recorded first information indicates a change in a size of the user data area according to the replacement recording operation; and

recording second information indicating positions of the specified area and the replacement-recorded area portion, in the management area of the disc,
wherein the writing step includes:
jumping to an area immediately before the end of the user data area in a non-sequential manner; and
writing the replacement-recording data on the area immediately before the end of the user data area.

2. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the last logical sector number of the user data area is obtained by updating information on a previous last logical sector number of the user data area.

2

3. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the last logical sector number of the user data area is recorded as new management information while information on a previous last logical sector number of the user data area is maintained as it is.

4. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the optical disc is a dual-layer type write once optical disc, to which the method is applied in the same manner.

5. (PREVIOUSLY PRESENTED) The method of claim 4, wherein the dual layers have user data areas consecutively given as one recording layer.

6. (CURRENTLY AMENDED) A method of managing overwrite on a write once optical disc, the disc including a user data area having a specified area where data is written therein, and an outer spare area, the method comprising:

when the specified area having the data written therein is requested to be overwritten, writing replacement-recording data to an area preceding the outer spare area of the disc;

extending a size of the outer spare area as large as a size of the area where the replacement-recording data is written in the writing step;

recording, in a management area of the disc, first information indicating a last logical sector number of the user data area, wherein the last logical sector number has been changed in accordance with the extension of the outer spare area such that the recorded first information indicates a change in a size of the user data area according to the extension of the outer spare area; and

recording second information indicating positions of the specified area and the replacement-recorded area, in the management area of the disc,

wherein the writing step includes:

jumping to the area preceding the outer spare area in a non-sequential manner; and

3

writing the replacement-recording data on the area preceding the outer spare area.

7. (CURRENTLY AMENDED) A method of managing overwrite on a write once optical disc, the disc including a user data area having a specified area where data is written therein, and an outer spare area, the method comprising:

in response to a request that the specified area having the data written therein be overwritten, writing replacement-recording data to a replacement-recording area of the outer spare area of the disc;

determining whether or not to extend a size of the outer spare area in consideration of a size of the replacement-recording area; and

recording, in a management area of the disc, first information indicating a last logical sector number of the user data area, wherein the last logical sector number has been changed in accordance with the determination of the extension of the outer spare area such that the recorded first information indicates a change in size of the user data area according to the extension of the outer spare area; and

recording, in the management area, second information indicating positions of the specified area and the replacement-recording area of the outer spare area,

wherein the writing step includes:

jumping to the replacement-recording area of the outer spare area in a non-sequential manner; and

writing the replacement-recording data on the replacement-recording area of the outer spare area.

8-20. (CANCELLED)

EHC/ktp

21. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the user data area is filled up with various replacement-recording data, first starting with the rear portion of the user data area and then areas of the user data area before the rear portion in a rear-to-front direction.

22. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the disc includes at least first and second recording layers, and the user data area extending from one portion in the first recording layer to another portion in the second recording area such that the rear portion of the user data area is physically located at a front area of a portion of the second recording area belong to the user data area.

23. (CANCELLED)

24. (PREVIOUSLY PRESENTED) The method of claim 6, wherein after the extending step, the outer spare area is defined to include a previous outer spare area and the area where the replacement-recording data is written in the writing step.

25. (CURRENTLY AMENDED) An apparatus for managing overwrite on a write once optical disc, the disc including a user data area having a specified area where data is written therein, the apparatus comprising:

in response to a request that the specified area having the data written therein be overwritten, a recording unit configured to write replacement-recording data associated with the request, starting from a rear portion of the user data area;

the recording unit further configured to record, in a management area of the disc, first information indicating a last logical sector number of the user data area, wherein the last logical sector number has been changed in accordance with the replacement recording operation such that the recorded first information indicates a change in a size of the user data area according to the replacement recording operation; and

EHC/ktp

the recording unit further configured to record second information indicating positions of the specified area and the replacement-recorded area portion, in the management area of the disc,

wherein to write the replacement-recording data, the recording unit jumps to an area immediately before the end of the user data area in a non-sequential manner, and writes the replacement-recording data on the area immediately before the end of the user data area.

26. (PREVIOUSLY PRESENTED) The apparatus of claim 25, wherein the last logical sector number of the user data area is obtained by updating information on a previous last logical sector number of the user data area.

27. (PREVIOUSLY PRESENTED) The apparatus of claim 25, wherein the last logical sector number of the user data area is recorded as new management information while information on a previous last logical sector number of the user data area is maintained as it is.

28. (CANCELLED)

29. (PREVIOUSLY PRESENTED) The apparatus of claim 25, wherein the user data area is filled up with various replacement-recording data, first starting with the rear portion of the user data area and then areas of the user data area before the rear portion in a rear-to-front direction.

30. (PREVIOUSLY PRESENTED) The apparatus of claim 25, wherein the disc includes at least first and second recording layers, and the user data area extending from one portion in the first recording layer to another portion in the second recording area such that the rear portion of the user data area is physically located at a front area of a portion of the second recording area belong to the user data area.

EHC/ktp

31. (CURRENTLY AMENDED) An apparatus for managing overwrite on a write once optical disc, the disc including a user data area having a specified area where data is written therein, and an outer spare area, the apparatus comprising:

when the specified area having the data written therein is requested to be overwritten, a recording unit configured to write replacement-recording data to an area preceding the outer spare area of the disc;

the recording unit further configured to extend a size of the outer spare area as large as a size of the area where the replacement-recording data is written;

the recording unit further configured to record, in a management area of the disc, first information indicating a last logical sector number of the user data area, wherein the last logical sector number has been changed in accordance with the extension of the outer spare area such that the recorded first information indicates a change in a size of the user data area according to the extension of the outer spare area; and

the recording unit further configured to record second information indicating positions of the specified area and the replacement-recorded area, in the management area of the disc, wherein to write the replacement-recording data, the recording unit jumps to the area preceding the outer spare area in a non-sequential manner, and writes the replacement-recording data on the area preceding the outer spare area.

32. (CANCELLED)

33. (PREVIOUSLY PRESENTED) The apparatus of claim 31, wherein after the size of the outer spare area has been extended, the outer spare area is defined to include a previous outer spare area and the area where the replacement-recording data is written.

34. (CURRENTLY AMENDED) A computer-readable storage medium, comprising:

a user data area having a specified area where data is written therein; and

a management area,

wherein in response to a request that the specified area be overwritten, replacement-recording data associated with the request is written starting from a rear portion of the user data area,

wherein first information indicating a last logical sector number of the user data area is written in the management area, where the last logical sector number has been changed in accordance with the replacement recording operation such that the recorded first information indicates a change in a size of the user data area according to the replacement recording operation, and

wherein second information indicating positions of the specified area and the replacement-recorded area portion ~~are~~ is written in the management area, and

wherein to write the replacement-recording data, an area immediately before the end of the user data area is found by jumping to that area in a non-sequential manner, and the replacement-recording data is written on the area immediately before the end of the user data area.

EHC/ktp